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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/708,932	11/08/2000	Salman Akram	3434.1US (97-856.1)	4170

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EXAMINER	
MACKEY, JAMES P	

ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 12/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	09/708,932	AKRAM, SALMAN	
	Examiner	Art Unit	
	James Mackey	1722	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-20,23-31,34-37 and 39-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-20,23-31,34-37 and 39-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3-11-03* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. Claims are objected to because of the following informalities: in claim 2, line 2, "comprises is" should be corrected. Also, the following claim recitations lack proper antecedent basis since they do not conform to the language used in the independent claims as amended: "said nonstick minimally wettable release layer" in claims 2 and 3; "said nonstick protective layer" in claims 7, 26 and 35; and "said nonstick minimally wettable layer" in claims 19, 20, 30 and 31. Appropriate correction is required.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-3, 6-20, 23-31, 34-37 and 39-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 18 and 29, "for forming a first shape of the solder paste ... which substantially conforms to the shape of the solder paste to the cavity" is unclear and indefinite (it appears that the phrase should read --for forming a first shape of the solder paste ... which substantially conforms to the shape of the cavity--).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 6-11, 16-20, 23-31, 34-37 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochiai et al. (U.S. Patent 5,643,831; col. 4, lines 50-60 and col. 6, lines 16-17) in view of any one of Yeh et al. (U.S. Patent 5,607,099; Figures 1a and 3; col. 4, line 26),

Cordes et al. (U.S. Patent 6,105,852; Figure 3; col. 3, lines 50-52), Tsuji et al. (U.S. Patent 5,930,603; Figure 2; col. 9, lines 30-31), MacKay et al. (U.S. Patent 6,293,456; Figures 3C-3D; col. 13, lines 44 and 51), and Fallon et al. (U.S. Patent 5,872,051; Figures 58-65; col. 40, line 7 through col. 41, line 15), **for the reasons of record** as described in paragraph 9 of the previous Office Action.

6. Claims 12-15, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ochiai et al. '831 in view of any one of Yeh, et al., Cordes et al., Tsuji et al., MacKay et al., and Fallon et al., as applied to claims 1-3, 6-11, 16-20, 23-31, 34-37 and 41 in paragraph 5 above, and further in view of Bolstad (U.S. Patent 2,979,773; col. 2, lines 5-14), **for the reasons of record** as described in paragraph 10 of the previous Office Action.

7. Applicant's claim amendments and arguments with respect only to the rejection of the claims under 35 USC 112, first paragraph, have been fully considered and are persuasive. The rejection of the claims under 35 USC 112, first paragraph, has been withdrawn.

8. Applicant's arguments filed 03 November 2003 have been fully considered but they are not persuasive.

Applicant argues that it would not have been obvious to modify the **method of making** the mold apparatus of Ochiai et al. '831 to form mold cavities having the claimed shapes; however, the instant claims are directed to a mold apparatus and NOT to a mold-forming process. Moreover, the test for obviousness is not whether the features of one reference may be bodily incorporated into the other to produce the claimed subject matter, but simply what the combination of references makes obvious to one of ordinary skill in the pertinent art, *In re Bozek*, 163 USPQ 545; proper inquiry should not be limited to the specific structure shown by the

references, but should be into the concepts fairly contained therein, and the overriding question to be determined is whether those concepts would suggest to one skilled in the art the modifications called for by the claims, *In re Van Beckum et al.*, 169 USPQ 47. The examiner contends that a skilled artisan with knowledge of the state of the art would have been motivated to modify Ochiai et al. '831 by providing the mold apparatus with mold cavities of well known and conventional shapes, with the expectation that the mold apparatus would function equally well with any such conventional mold cavity shapes, and since such mold cavity shapes have recognized utility for forming solder balls.

Applicant argues that none of the cited prior art references teaches the "concept" of the "substrate having a specific cavity shape to transfer solder paste after it has been heated to a semiconductor chip with the solder paste still being a solder paste, not a solder ball or melted solder, so that the shape of the transferred solder paste will form the precise solder ball shape of the bond pad of the semiconductor die", further arguing that "absolutely none of the cited prior art references uses a substrate to transfer a specific shape as is claimed of solder paste to a semiconductor die to form a solder ball thereon when heated to a melting temperature"; however, such relates only to the intended use of the claimed mold apparatus structure, which does not patentably distinguish the apparatus claims. Note that intended use has been continuously held not to be germane to determining the patentability of the apparatus, *In re Finsterwalder*, 168 USPQ 530; the manner or method in which a machine is to be utilized is not germane to the issue of patentability of the machine itself, *In re Casey*, 152 USPQ 235; purpose to which apparatus is to be put and expression relating apparatus to contents thereof during intended operation are not significant in determining patentability of an apparatus claim, *Ex parte Thibault*, 164 USPQ 666;

a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations, *Ex parte Masham*, 2 USPQ2d 1647.

Applicant argues that "the Bolstad reference deals with molding apparatus years before any semiconductor die or device had even been invented" and "therefore it can have no teaching or suggestion for any use therewith"; the examiner disagrees. Bolstad has been cited for the teaching of heater strips for heating of semiconductor mold material 22; notwithstanding the explicit teaching of a semiconductor mold material in Bolstad (similar to the silicon mold material taught in Ochiai et al. '831), Bolstad clearly relates to heating means for molding apparatus, which is sufficiently related to the molding apparatus subject matter of Ochiai et al. '831 such that a skilled artisan would have been presumptively aware of the teachings of Bolstad.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mackey whose telephone number is 703-308-1195. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is 703-892-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

James Mackey
Primary Examiner
Art Unit 1722

11/24/03

jpm
November 24, 2003